



New Features Bulletin

SAP Replication Server®
Options 15.7.1 SP200

Linux, Microsoft Windows, and UNIX

DOCUMENT ID: DC01004-01-1571200-01

LAST REVISED: March 2014

Copyright © 2014 by SAP AG or an SAP affiliate company. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors. National product specifications may vary.

These materials are provided by SAP AG and its affiliated companies ("SAP Group") for informational purposes only, without representation or warranty of any kind, and SAP Group shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP Group products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

SAP and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP AG in Germany and other countries. Please see <http://www.sap.com/corporate-en/legal/copyright/index.epx#trademark> for additional trademark information and notices.

Contents

New Features in Replication Server Options 15.7.1	
SP200	1
New Features for Replication into SAP HANA	
Database	1
Replication Support for SAP Business Suite	
Applications	1
DDL Replication Enhancements	1
Setup and Configuration of Replication to SAP	
HANA Database Using RMA	2
Support for SAP HANA Database as a Primary	
Datasever	2
New Features in Replication Agent	2
Support for Approximate Datatypes as Primary	
Keys	3
Generate Replication Definitions When Primary	
and Replicate Table Schemas are Different	3
Data Tracing Improvements	4
New Log Reader Statistics	4
New Commands	5
New Parameters	6
New Features in Replication Agent for Oracle	7
Support for Oracle 12c	7
DDL Replication Using XStream APIs	7
New Features in Replication Agent for Microsoft SQL	
Server	8
Support for Replication Agent for Microsoft SQL	
Server on Windows Failover Clustering	8
New Stored Procedure	8
New Features in Replication Agent for UDB	9
Support for IBM DB2 UDB 10.5	9

Support for DDL Replication in Replication	
Agent for UDB	9
System Management Tool	9
Removal of Sybase Central	9
Supported and Unsupported Datatypes	10
Datatypes for Oracle Replication	10
Datatypes for Microsoft SQL Server Replication	
.....	15
Datatypes for IBM DB2 UDB Replication	20
Unsupported Functionalities	24

New Features in Replication Server Options 15.7.1 SP200

Learn about the new features in SAP® Replication Server® Options 15.7.1 SP200 and its component, Replication Agent™.

New Features for Replication into SAP HANA Database

Replication Agent 15.7.1 SP200 includes several enhancements that support SAP HANA® database replication.

Replication Support for SAP Business Suite Applications

Replication Agent supports replication into the SAP HANA database from SAP Business Suite applications running on Oracle, IBM DB2 UDB, or Microsoft SQL Server.

See *Replication Server Quick Start Guide for SAP HANA Database* and *Replication Server Heterogeneous Replication Guide*.

DDL Replication Enhancements

Replication Agent and SAP® Replication Server® support replication of several data definition language (DDL) commands in a heterogeneous replication environment when the replicate is an SAP HANA database.

Replication Agent and Replication Server supports replication of these DDL commands into SAP HANA database when the primary database is Oracle, Microsoft SQL Server, or DB2 UDB:

- **create table**
- **alter table (add column or drop column)**
- **rename table**
- **drop table**

With this enhancement, Replication Server automatically alters the database replication definition to reflect any DDL changes in a database that is marked for replication at the database level, if database replication definition is defined with the **auto_update_table_list** or **auto_extend_table_list** parameter. For example, if a database is marked for replication and a table is subsequently added to the database, replication is automatically established for the newly added table.

Note that a table that is created, altered, renamed, or dropped is not normalized by the table replication definition except for the replicate table owner, if:

- The replicate table owner defined is in the table replication definition, and
- The replicate site is subscribed to the table replication definition.

See:

- *SAP Replication Server Reference Manual > Replication Server Commands > create database replication definition.*
- *SAP Replication Server Heterogeneous Replication Guide > SAP HANA Database as Replicate Data Server > DDL Replication in Heterogeneous Replication Environment.*

Setup and Configuration of Replication to SAP HANA Database Using RMA

Replication Management Agent (RMA) is a distributed management agent that you can use to set up and manage replication from any supported databases to an SAP HANA database.

RMA supports automated setup, configuration and materialization, monitoring, and administration of an SAP Business Suite or non-Business Suite system.

Using RMA, you can set up replication for these primary databases to a replicate SAP HANA database:

- IBM UDB DB2
- Microsoft SQL Server
- Oracle

RMA also supports replicating an ERP database from any of the supported databases. For instructions about setting up replication using RMA, see the *Replication Management Agent Configuration and Users Guide*.

Support for SAP HANA Database as a Primary Dataserver

You can use the Replication Agent for SAP HANA database to configure, manage, and deploy a replication model that replicates data from a primary to a replicate SAP HANA database.

Replication Agent for SAP HANA, which runs inside a Replication Management Agent (RMA) container, performs initial data extraction and load, and also replicates data changes on the primary SAP HANA server to the replicate SAP HANA server.

For instructions about installing and deploying a replication model, see the *Replication Agent for SAP HANA Database Configuration and Users Guide*.

New Features in Replication Agent

Replication Agent includes several enhancements in version 15.7.1 SP200.

Support for Approximate Datatypes as Primary Keys

The Replication Agent 15.7.1 SP200 now uses approximate datatypes as primary keys in a replication definition.

In SAP replication technology, `double`, `float`, and `real` datatypes are considered as approximate values, which require some level of precision rounding.

For example, an approximate value of 1.234567890 on machine A is rounded to 1.234567900 on machine B. If you replicate an **update** statement at machine A by issuing:

```
update mytable where coll = '1.234567890'
```

The **update** statement executes successfully at machine A; but the Replication Agent does not update any rows at machine B because 1.234567890 does not equal 1.2345678900.

By default in earlier versions, SAP Replication Server excluded approximate datatype (`float`, `real`, and `double`) columns from the replication definition.

In earlier versions of Replication Agent, if you issue **rs_create_repdef** with these primary table values:

```
create table(pkey1 int primary_key, pkey2 float primary_key, col3
varchar(300))
```

The resulting replication definition included only `pkey1` in the primary key definition; `pkey2` was excluded.

With Replication Agent 15.7.1 SP200, you can use the **repdef_allow_approx_pkey** configuration parameter to override the default **rs_create_repdef** behavior. When **repdef_allow_approx_pkey** is true, both `pkey1` and `pkey2` columns are included in the replication definition.

The **repdef_allow_approx_pkey** configuration parameter is supported by primary IBM DB2 UDB, Microsoft SQL Server, and Oracle databases.

See *rs_create_repdef* in the *Replication Agent Reference Manual*.

Generate Replication Definitions When Primary and Replicate Table Schemas are Different

Use **rs_repdef_schema_map** before generating replication definitions if the primary and replicate table schemas are different.

In earlier versions, if the primary and replicate table schemas were different, you had to manually create replication definitions. Now, you can use **rs_repdef_schema_map** with the **add** option before using these commands to generate replication definitions:

- **rs_create_repdef**
- **pdb_setreptable** when the configuration parameter **pdb_auto_create_repdefs** is true.

See *Replication Agent Reference Manual*.

Example:

If *user1* is the primary table schema and *user2* is the replicate table schema, execute **rs_repdef_schema_map** with the **add** option:

```
rs_repdef_schema_map add, user1, user2
```

For any automatically generated replication definition, Replication Agent generates the syntax:

```
create replication definition [replication_definition_name]
with primary at [primary_database_name]
with primary table named user1.primary_table_name
with replicate table named user2.primary_table_name
```

Data Tracing Improvements

You can now set trace filters to log only the information that matches the user-defined filters in the Replication Agent system trace logs.

Trace filters make debugging easier by reducing the amount of data that is logged in the Replication Agent log files.

In Replication Agent 15.7.1 SP200 you can set trace filters for Log Transfer Language (LTL) only.

See *trace_filter* in the *Replication Agent Reference Manual*.

New Log Reader Statistics

The **ra_statistics** command returns additional log reader statistics for Microsoft SQL Server and Oracle databases.

Table 1. Log Reader Statistics

Statistic	Description
(Microsoft SQL Server only) Estimated time to the end of the log (sec)	The approximate scan time in seconds to reach the end of the transaction log
(Microsoft SQL Server only) Approximate number of log operations to scan	The approximate number of log operations that are to be scanned
(Oracle XStream only) Last scanned record locator	The last scanned record retrieved from an Oracle XStream outbound server

See **ra_statistics** in the *Replication Agent Reference Manual*.

New Commands

New Replication Agent commands.

Command	Description
pdb_setrepddl	Returns the DDL replication status, and enables or disables replication for DDL statements. Replication Agent for UDB now supports the pdb_setrepddl command. This command was already available for Replication Agents for Microsoft SQL Server and Oracle.
ra_helpconnection	Displays all primary data server SQL connections and client sessions.
ra_helpsvsession	Returns Replication Agent client session information.
ra_killconnection	Terminates the primary data server SQL connections. You can terminate all free SQL connections, all SQL connections, or a particular SQL connection by specifying the connection ID.
rs_repdef_schema_map	Returns the current replication definition schema map, and adds or removes a replication schema map.

See the *Replication Agent Reference Manual*.

New Parameters

New Replication Agent parameters.

Parameter	Description
ddl_username	<p>The database user name included in LTL for replicating DDL commands to the standby database. This user must have permission to execute all replicated DDL commands at the standby database.</p> <hr/> <p>Note: You do not need to set the ddl_username and ddl_password parameters if the Replication Server parameter dsi_replication_ddl is on.</p> <hr/> <p>Replication Agent for UDB now supports the ddl_username parameter. This command was already available for Replication Agents for Microsoft SQL Server and Oracle.</p>
ddl_password	<p>Updates the log device repository in the Replication Agent System Database (RASD). Identifies the password for ddl_username.</p> <p>Replication Agent for UDB now supports the ddl_password parameter. This command was already available for Replication Agents for Microsoft SQL Server and Oracle.</p>
pdb_automark_tables	<p>Specifies whether Replication Agent automatically marks tables for replication during DDL replication.</p> <p>Replication Agent for UDB now supports the pdb_automark_tables parameter. This command was already available for Replication Agents for Microsoft SQL Server and Oracle.</p>
pdb_automark_nocdc_error	<p>(IBM DB2 UDB only) Specifies whether to stop replication if DDL replication and automark is enabled but the table data capture is not enabled in the same create table transaction.</p>
pds_admin_connection_pool_size	<p>(IBM DB2 UDB only) Specifies the primary data server admin connection pool size.</p>
pds_sql_connection_pool_size	<p>Specifies the primary data server SQL connection pool size.</p>

Parameter	Description
<code>ra_autocorrect_on_mark</code>	<p>Determines whether to autocorrect tables marked for replication immediately.</p> <p>In version 15.7.1 SP200, by default, Replication Agent autocorrects tables marked for replication when the <code>ra_autocorrect_on_mark</code> configuration parameter value is set to true.</p>

See the *Replication Agent Reference Manual*.

New Features in Replication Agent for Oracle

Replication Agent for Oracle includes several enhancements in version 15.7.1 SP200.

Support for Oracle 12c

Replication for Oracle 15.7.1 SP200 now supports Oracle 12c database at the same functional level of Oracle 11g.

The Replication Agent for Oracle Log Reader component with LogMiner requires the **GRANT LOGMINING to <pds_username>** administrative permission to read from Oracle 12c transaction logs. If the **GRANT LOGMINING to <pds_username>** permission is granted, do not grant **SELECT ON V_\$LOGMNR_LOGS** and **SELECT ON V_\$LOGMNR_CONTENTS** permissions separately.

See the *Replication Agent 15.7.1 SP200 Primary Database Guide*.

DDL Replication Using XStream APIs

The Replication Agent for Oracle Log Reader now supports data definition language (DDL) statements only in an Oracle-to-Oracle replication environment using XStream APIs.

Use the `pdb_setrepddl` to view the DDL replication status, and to enable or disable replication of DDL statements.

Replication Agent for Oracle supports these DDL configuration parameters:

- `pdb_auto_alter_repdefs`
- `pdb_automark_tables`
- `lr_send_trunc_partition_ddl`
- `ddl_password`
- `ddl_username`

See *Replication Agent Reference Manual*.

New Features in Replication Agent for Microsoft SQL Server

Replication Agent for Microsoft SQL Server includes several enhancements in version 15.7.1 SP200.

Support for Replication Agent for Microsoft SQL Server on Windows Failover Clustering

You can now set up Replication Agent for Microsoft SQL Server 15.7.1 SP200 on a shared disk, and add it as a generic application on the Windows Server Failover Clustering (WFSC) cluster.

In the WFSC cluster setup, Replication Agent for Microsoft SQL Server supports only the instance-level high availability cluster configuration for Microsoft SQL Server database. Replication Agent does not support the database-level high availability (an availability group) cluster configuration.

See *Setting Up Replication Agent for Microsoft SQL Server on Windows Server Failover Clustering* in the *Replication Agent Primary Database Guide*.

New Stored Procedure

Replication Agent for Microsoft SQL Server introduces the **sp_SybTruncateTable** stored procedure to support truncation of tables marked for replication from SAP enterprise resource planning (ERP) or any applications.

Earlier versions of Replication Agent for Microsoft SQL Server does not support truncation of tables marked for replication from any applications due to the Microsoft SQL Server database limitation.

In 15.7.1 SP200, you can execute the **sp_SybTruncateTable** stored procedure to truncate tables marked for replication from SAP enterprise resource planning (ERP) applications. When you issue **sp_SybTruncateTable**, the stored procedure turns off the replication flag for the marked tables temporarily, issues the **truncate table** command, and then turns on the replication flag.

The SAP ERP system that uses Replication Agent for Microsoft SQL Server for replication requires the latest patch of the SAP Kernel that has the **sp_SybTruncateTable** stored procedure.

See *SAP Note 1972365 – Retry on error 4711*: <https://css.wdf.sap.corp/sap/support/notes/1972365> for the SAP Kernel download and installation instructions.

The **sp_SybTruncateTable** stored procedure is installed during first-time initialization with **server_admin init**. The truncate table DDL statements are always sent to SAP Replication Server as data manipulation language (DML) transactions.

See *The sp_SybTruncateTable Stored Procedure* in the *Replication Agent Primary Database Guide*.

New Features in Replication Agent for UDB

Replication Agent for UDB includes several enhancements in version 15.7.1 SP200.

Support for IBM DB2 UDB 10.5

Replication Agent supports replication from IBM DB2 UDB 10.5 at the IBM DB2 UDB 9.7 functional level.

Support for DDL Replication in Replication Agent for UDB

Replication Agent for UDB now supports replication of several DDL commands.

- **create table**
- **alter table (add column)**
- **rename table**
- **drop table**

When you create a new table, and if **pdb_automark_tables** is true, Replication Agent for UDB automatically marks the table for replication.

For automatic marking of tables to succeed, you must manually set the value of the table **DATA CAPTURE** option to **DATA CAPTURE CHANGES** in the same transaction as the **create table** DDL command. Otherwise, Replication Agent for UDB logs an error message in the system log and in the NOCDCERRORTRC trace log for this event, along with the name of the newly created table. Replication Agent for UDB continues replicating all tables that are marked for replication.

To troubleshoot errors when Replication Agent for UDB fails to replicate DDL commands for a newly created table, see *Troubleshooting DDL Replication Failure in Replication Agent for UDB* in the *Replication Agent Administration Guide*.

System Management Tool

You can use the SAP® Control Center to manage your replication system and environment.

Removal of Sybase Central

Sybase Central is no longer available from any SAP or Sybase Web site. Use SAP Control Center to manage your replication environment.

See *SAP Control Center for Replication*.

Supported and Unsupported Datatypes

Supported and unsupported datatypes in Replication Server Options 15.7.1 SP200.

Datatypes for Oracle Replication

Supported and unsupported datatypes for replicating into and out of Oracle.

Replicating Datatypes into Oracle

These SAP (formerly Sybase) datatypes are supported or unsupported by ExpressConnect for Oracle for replicating into Oracle.

Table 2. ExpressConnect Supported and Unsupported SAP Datatypes

Datatype	Supported	Unsupported
SAP (formerly Sybase)	bigint	bigdatetime
	integer	bigtime
	smallint	
	tinyint	
	decimal	
	numeric	
	unsigned bigint	
	unsigned integer	
	unsigned smallint	
	unsigned tinyint	
	unichar	
	univarchar	
	unitext	
	float	
	double	
real		

Datatype	Supported	Unsupported
	money	
	smallmoney	
	date	
	time	
	datetime	
	smalldatetime	
	timestamp	
	char	
	nchar	
	varchar	
	nvarchar	
	text	
	binary	
	varbinary	
	image	
	bit	
	sysname (same as varchar(30))	
	longsysname (same as varchar(255))	
	user-defined datatypes (as underlying type)	

These Oracle datatypes are supported or unsupported by ExpressConnect for Oracle for replicating into Oracle.

Table 3. ExpressConnect Supported and Unsupported Oracle Datatypes

Datatype	Supported	Unsupported
Oracle	anydata (limited support)	Associative array

Datatype	Supported	Unsupported
	bfile (only for replication, not gateway)	mlslabel
	binary_double	Nested tables
	binary_float	Oracle-supplied datatypes
	blob	Partial large object (LOB) updates
	char	ref
	clob	User-defined datatypes (UDDs) containing LOBs
	date	UDDs that are not final
	interval day to second	urowid
	interval year to month	varray
	long	SecureFile LOBs
	long raw	Oracle 11g xmltype
	nchar	
	nclob	
	number	
	nvarchar2	
	raw	
	rowid	
	simple_integer	
	timestamp	
	timestamp with [local] time zone	
	UDD object type (only for replication, not gateway)	
	varchar2	

Datatype	Supported	Unsupported
	Oracle 10g xmltype (limited support, handled as clob)	

Replicating Datatypes out of Oracle

These Oracle datatypes are supported or unsupported by Replication Agent for replicating out of Oracle.

Table 4. Replication Agent Supported and Unsupported Oracle Datatypes

Datatype	Supported	Unsupported
Oracle	anydata (limited support)	associative array
	binary_double	bfile
	binary_float	mlslabel
	blob	nested tables
	char	Oracle-supplied datatypes
	clob	partial LOB updates
	date	ref
	interval day to second	UDDs containing LOB
	interval year to month	UDDs that are not final
	long	urowid
	long raw	varray
	nchar	
	nclob	
	number	
	nvarchar2	
	raw	
	rowid	
simple_integer		

Datatype	Supported	Unsupported
	(Only if the your primary database is Oracle 11g Release 2 or later) Secure-File LOBs	
	timestamp	
	timestamp with [local] time zone	
	UDD object type	
	varchar2	
	xmltype (limited support, handled as clob)	

Oracle-Supplied Datatype Limitations

Replication Agent cannot replicate these Oracle-supplied datatypes:

- “ANY” types (SYS.ANYTYPE, SYS.ANYDATASET), except for SYS.ANYDATA.
- Oracle 10g and 11g XMLType data replicated to Oracle 11g. Replication Agent does support replicating XMLType data to Oracle 10g.
- Spatial types (MDSYS.SDO_GEOMETRY, SDO_TOPO_GEOMETRY, SDO_GEORASTER).
- Media types (ORDSYS.ORDAudio, ORDSYS.ORDImage, ORDSYS.ORDImageSignature, ORDSYS.ORDVideo, ORDSYS.ORDDoc, SI_StillImage, SI_Color, SI_AverageColor, SI_ColorHistogram, SI_PositionalColor, SI_Texture, SI_FeatureList).
- Expression filter type.
- Replication from an ANYDATA column to a non-ANYDATA column.
- ANYDATA size exceeding 16KB, which is the size constraint of the Replication Server OPAQUE datatype.
- BFile, UROWID, REF, NESTED TABLE, and VARRAY datatypes stored in the ANYDATA column.
- XMLType not stored as CLOB.

Note: XMLType stored as CLOB can be replicated to Oracle 10g and to SAP® Adaptive Server® Enterprise (SAP® ASE). Replication Agent does support replicating XMLType data to Oracle 11g.

- Replication of data stored in Oracle XML DB repository using standard protocols such as FTP and HTTP(S) or WebDAV, and other Oracle XML DB API

- Marking procedures that use `PLS_INTEGER` PL/SQL type or any of its other subtypes; however, Replication Agent does support marking procedures that use `SIMPLE_INTEGER` PL/SQL type.

Replication Agent cannot replicate some Oracle datatypes, because XStream APIs do not support them in row Logical Change Records (LCRs).

- BFile
- ROWID
- User-defined datatypes, such as REF, including these object types:
 - NESTED TABLE
 - VARRAY
- XMLType object stored relationally or as a binary XML

These Oracle datatypes are also not supported by XStream APIs:

- “ANY” types (`SYS.ANYTYPE`, `SYS.ANYDATASET`)
- Media types (`ORDSYS.ORDAudio`, `ORDSYS.ORDImage`, `ORDSYS.ORDImageSignature`, `ORDSYS.ORDVideo`, `ORDSYS.ORDDoc`, `SI_StillImage`, `SI_Color`, `SI_AverageColor`, `SI_ColorHistogram`, `SI_PositionalColor`, `SI_Texture`, `SI_FeatureList`)
- Spatial types (`MDSYS.SDO_GEOMETRY`, `SDO_TOPO_GEOMETRY`, `SDO_GEORASTER`)
- Uniform Resource Identifier (URI) Types

Datatypes for Microsoft SQL Server Replication

Supported and unsupported datatypes for replicating into and out of Microsoft SQL Server.

Replicating Datatypes into Microsoft SQL Server

These SAP datatypes are supported or unsupported by ECDA 15.0.1 and later for replicating into Microsoft SQL Server.

Table 5. ECDA Supported and Unsupported SAP Datatypes

Datatype	Supported	Unsupported
SAP	bigint	bigdatetime
	integer	bigtime
	smallint	
	tinyint	
	decimal	

Datatype	Supported	Unsupported
	numeric	
	unsigned bigint	
	unsigned integer	
	unsigned smallint	
	unsigned tinyint	
	unichar	
	univarchar	
	unitext	
	float	
	double	
	real	
	money	
	smallmoney	
	date	
	time	
	datetime	
	smalldatetime	
	timestamp	
	char	
	nchar	
	varchar	
	nvarchar	
	text	
	binary	
	varbinary	

Datatype	Supported	Unsupported
	image	
	bit	
	sysname (same as varchar(30))	
	longsysname (same as varchar(255))	
	UDDs (as underlying type)	

These Microsoft SQL Server datatypes are supported or unsupported by ECDA 15.0.1 and later for replicating into Microsoft SQL Server.

Table 6. ECDA Supported and Unsupported Microsoft SQL Server Datatypes

Datatypes	Supported	Unsupported
Microsoft SQL Server	bigint	cursor
	nchar	date
	nvarchar	datetime2
	ntext	datetimeoffset
	varchar (max) (only for replication not gateway)	filestream
	nvarchar (max) (only for replication not gateway)	geography
	sql_variant	geometry
	binary	hierarchyid
	bit	large UDDs
	char	table
	datetime	time
	decimal	xml
	float	
	image	

Datatypes	Supported	Unsupported
	integer	
	money	
	numeric	
	real	
	smalldatetime	
	smallint	
	smallmoney	
	text	
	timestamp	
	tinyint	
	uniqueidentifier	
	varbinary	
	varbinary (max) (only for replication, not gateway)	
	varchar	

Note: Replication Agent supports partial update replication for the Microsoft SQL Server max datatypes when the replicate database is Microsoft SQL Server.

Replicating Datatypes out of Microsoft SQL Server

These Microsoft SQL Server datatypes are supported or unsupported by Replication Agent for replicating out of Microsoft SQL Server.

Table 7. Replication Agent Supported and Unsupported Microsoft SQL Server Datatypes

Datatypes	Supported	Unsupported
Microsoft SQL Server	bigint	cursor
	date	filestream
	datetime2	geography
	datetimeoffset	geometry

Datatypes	Supported	Unsupported
	nchar	hierarchyid
	nvarchar	large UDDs
	ntext	table
	varchar (max) (replicate must be Microsoft SQL Server)	time
	nvarchar (max) (replicate must be Microsoft SQL Server)	xml
	sql_variant	
	binary	
	bit	
	char	
	datetime	
	decimal	
	float	
	image	
	integer	
	money	
	numeric	
	real	
	smalldatetime	
	smallint	
	smallmoney	
	text	
	timestamp	
	tinyint	
	uniqueidentifier	

Datatypes	Supported	Unsupported
	varbinary	
	varbinary(max) (replicate must be Microsoft SQL Server)	
	varchar	

Datatypes for IBM DB2 UDB Replication

Supported and unsupported datatypes for replicating into and out of IBM DB2 UDB.

Replicating Datatypes into IBM DB2 UDB

These SAP datatypes are supported or unsupported by ECDA 15.0.1 for replicating into IBM DB2 UDB.

Table 8. ECDA Supported and Unsupported SAP Datatypes

Datatype	Supported	Unsupported
SAP	bigint	bigdatetime
	integer	bigtime
	smallint	image
	tinyint	text
	decimal	unitext
	numeric	
	unsigned bigint	
	unsigned integer	
	unsigned smallint	
	unsigned tinyint	
	unichar	
	univarchar	
	float	
	double	
real		

Datatype	Supported	Unsupported
	money	
	smallmoney	
	date	
	time	
	datetime	
	smalldatetime	
	timestamp	
	char	
	nchar	
	varchar	
	nvarchar	
	binary	
	varbinary	
	bit	
	sysname (same as varchar(30))	
	longsysname (same as varchar(255))	
	UDDs (as underlying type)	

These IBM DB2 UDB datatypes are supported or unsupported by ECDA 15.0.1 for replicating into IBM DB2 UDB.

Table 9. ECDA Supported and Unsupported IBM DB2 UDB Datatypes

Datatypes	Supported	Unsupported
IBM DB2 UDB	bigint	blob
	graphic	clob
	vargraphic	dbclob
	decfloat (for replication only, not gateway)	long varchar

Datatypes	Supported	Unsupported
	smallint	long vargraphic
	float	ROWID
	integer	long varchar for bit data
	decimal	xml
	real	UDDs
	double	
	time	
	timestamp	
	date	
	char	
	varchar	
	char for bit data	
	varchar for bit data	

Note: The `decfloat` datatype is supported only in a replication environment (not for gateway or any other ECDA use).

Replicating Datatypes out of IBM DB2 UDB

These IBM DB2 UDB datatypes are supported or unsupported by Replication Agent for replicating out of IBM DB2 UDB.

Table 10. Replication Agent Supported and Unsupported IBM DB2 UDB Datatypes

Datatypes	Supported	Unsupported
IBM DB2 UDB	bigint	ROWID
	char	UDDs
	char for bit data	xml
	blob	

Datatypes	Supported	Unsupported
	clob	
	date	
	dbclob	
	decfloat	
	decimal	
	double	
	float	
	graphic	
	integer	
	long varchar	
	long varchar for bit data	
	long vargraphic	
	real	
	smallint	
	time	
	timestamp	
	varchar	
	varchar for bit data	
	vargraphic	

IBM DB2 UDB 9.5 and 9.7 Support Limitations

Replication Agent does not support these features of IBM DB2 UDB 9.5 or 9.7:

- Replication of XML datatype

Note: Since Replication Agent does not support replicating XML, restrictions have been imposed on marking a table that contains XML columns. Replication Agent generates an error message each time an attempt is made to mark a table with XML columns. To

replicate all but the XML columns of a table, use the **force** option when marking the table for replication.

- When replicating DECFLOAT columns from UDB to other databases that do not support DECFLOAT or an equivalent datatype, DECFLOAT is mapped to FLOAT, which may cause a loss of precision.
- Replication Agent does not support replication of DECFLOAT special values such as positive and negative INFINITY, NAN, and SNAN. Replication Agent replicates these values to NULL if the column is nullable, or 0.0 if the column is not nullable.

Unsupported Functionalities

Functionality are not supported by Replication Server Options 15.7.1.

Note: Only features and functionality included in the Replication Server Options documentation are supported for a given solution. If a feature is not documented, it is not supported.

General Functionality

- IPv6-formatted addresses
- 4KB-sector disk drives
- Replication Server **rs_init** utility (for non-ASE databases)
- Replication Server **rs_subcomp** utility (for non-ASE databases)
- Replication Server when replicating in an environment where other vendors are replicating (for non-ASE databases)

Oracle-Related Functionality

- Oracle-packaged stored procedures and functions (standalone procedures and functions are supported)
- Oracle virtual columns
- Oracle label security
- Custom function strings for text and image processing with ECO – see the *Replication Server Heterogeneous Replication Guide*.

IBM DB2 UDB-Related Functionality

- IBM DB2 Universal Database stored procedures
- IBM DB2 clients and servers of different versions on different machines – if your IBM DB2 client is installed on a different operating system than your IBM DB2 server, both the client and server must be of the same version.

Microsoft SQL Server-Related Functionality

- Microsoft SQL Server virtual computed columns
- Replication Agent does not support these features of Microsoft SQL Server 2008:
 - Transparent data encryption (TDE)
 - Procedures with table-valued parameters (TVPs)
 - Sparse column and column set
 - MERGE SQL statement

